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## SECURITY STORAGE CONTAINER

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### CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority under 35 U.S.C. § 119(e) to provisional application, Attorney Docket No. 45800/CAG/P501, filed October 19, 2001, the contents of which is expressly incorporated herein by referenced as though fully set forth in full.

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### BACKGROUND

#### Field

15 The present invention relates generally to storage containers, and more particularly, to storage containers for recorded media.

#### Background

20 In recent years, optical discs have emerged as one of the most popular mediums for storing audio, video and computer information. To accommodate the wholesale and retail distribution of the disc, numerous storage containers have been developed. These storage containers typically include a base supporting a central hub to engage an aperture in the center of the disc. The base is generally hinged to a lid so as to open and close the storage container like a book. This design is well suited for use by the consumer, but may pose certain security risks in the retail environment. In the recent years, retailers have reported numerous incidents of theft involving the unauthorized removal of discs from their storage containers. Labels and shrink wrap have been proposed in the past as a way to deal with this problem. However, these proposals have had limited success because of the ease at which labels and shrink wrap can be opened with a sharp item. Accordingly, there is a need for a storage container which is  
30 designed to discourage theft in the retail environment.

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## SUMMARY

5 In one aspect of the present invention, a storage container includes a lid having a lid panel and an arm extending from the lid panel, the arm including a detent having a first surface parallel to the lid panel and a second surface having a taper extending at least a portion between the first surface and a distal end of the arm, and a base configured to receive a disc, the base having a base panel and a member extending from the base panel, the member having an opening defined by an interior surface having a portion thereof parallel to the base panel, the first surface of the  
10 detent engaging the interior surface portion of the member when the storage container is closed.

15 In another aspect of the present invention, a storage container includes a lid, a base configured to receive a disc, and means for latching the lid to the base to close the storage container.

20 In yet another aspect of the present invention, a storage container includes a lid, a base having an annular wall configured to support an outer periphery of a disc, means for latching the lid to the base to close the storage container, means for clamping the outer periphery of the disc to the annular wall when the storage container is closed, and means, coupled to the lid, for preventing the disc from sliding out of the storage container.

25 It is understood that other aspects of the present invention will become readily apparent to those skilled in the art from the following detailed description, wherein is shown and described only exemplary embodiments of the invention, simply by way of illustration. As will be realized, the invention is capable of other and different embodiments, and its several details are capable of modifications in various respects, all without departing from the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

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## BRIEF DESCRIPTION OF THE DRAWINGS

5 Aspects of the present invention are illustrated by way of example, and not by way of limitation, in the accompanying drawings in which like reference numerals refer to similar elements:

FIG. 1 is a perspective view of an exemplary storage container;

10 FIG. 1A is a blow up of a portion of the exemplary storage container of FIG. 1 illustrating the detail of a tab;

15 FIG. 1B is a blow up of a portion of the exemplary storage container of FIG. 1 illustrating the details of a catch;

FIG. 2 is a cross-section view of the exemplary storage container of FIG. 1 taken along line 2 with a disc shown prior to engagement with a hub;

20 FIG. 3 is a cross-section view of the exemplary storage container of FIG. 1 taken along line 2 with a disc shown in engagement with the hub;

FIG. 4 is a perspective view of an exemplary storage container in the closed position;

25 FIG. 5 is a cross-section view of the exemplary storage container of FIG. 4 taken along lines 5;

FIG. 6 is a perspective view of a portion of an exemplary storage container illustrating the details of a tab and catch latching mechanism;

30 FIG. 7 is a cross-section view of the tab and catch latching mechanism of FIG. 6 taken along line 7 showing the tab just prior to engagement with the catch;

35 FIG. 8 is a cross-section view of the tab and catch latching mechanism of FIG. 6 taken along line 7 showing the tab engaged with the catch;

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FIG. 9 is a perspective view of a portion of an exemplary storage container illustrating the details of a break away tab hinged to the storage container; and

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FIG. 10 is an exploded perspective view of the exemplary storage container of FIG. 9 illustrating the insertion of the break away tab into the exemplary storage container after the hinge connection is broken.

## 10 DETAILED DESCRIPTION

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The detailed description set forth below in connection with the appended drawings is intended as a description of exemplary embodiments of the present invention and is not intended to represent the only embodiments in which the present invention can be practiced. The term “exemplary” used throughout this description means “serving as an example, instance, or illustration,” and should not necessarily be construed as preferred or advantageous over other embodiments. The detailed description sets forth the inventive concepts in terms of construction and function of the exemplary storage containers. It is to be understood, however, that the same, 20  
equivalent, and alternative constructions and functions may be accomplished with other storage containers which are also intended to be encompassed within the spirit and scope of the invention.

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As used herein, the term “optical disc” or “disc” means any compact disc (CD), compact disc read only memory (CD-ROM), recordable compact disc (CD-R), rewriteable compact disc (CD-RW), digital video disc or digital versatile disc (DVD), recordable digital video disc or recordable digital versatile disc (DVD-R), digital video disc random access memory or digital versatile disc random access (DVD-RAM) , as well as other similar media which is used for storing information.

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A perspective view of an exemplary storage container is shown in FIG. 1. The exemplary storage container includes several security features that are particularly useful for these types of containers in the retail environment. However, as those skilled in the art will appreciate, these security features are equally applicable to any type of storage container regardless of the contents. 35  
In the described exemplary embodiment, the storage container comprises a housing 12 including

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a lid 14 and a base 16. The lid 14 may include a pair of clips 15 to hold pamphlets, brochures,  
booklets, or other printed media. The lid 14 can be attached to the base 16 in a variety of ways.  
By way of example, a hinge panel 18 can be attached to the lid 14 with a first living hinge 20 and  
5 attached to the base 16 with a second living hinge 22. Various other means for attaching the lid  
14 to the base 16 will be readily apparent to those skilled in the art.

The base 16 includes a base panel 24 with a peripheral base wall 26 extending along the  
three sides of the base panel not attached to the living hinge 22. The base panel 24 includes an  
10 annular wall 28 to support the disc away from the base panel 24. The annular wall 28 can be  
designed with a seat 30 that supports the unrecorded outer edge of the disc. The annular wall 28  
may further be equipped with any number of finger holes to facilitate the removal of the disc  
from the storage container. In the described exemplary embodiment, there are four finger holes  
15 32 equally spaced from one another along the circumference of the annular wall 28. However,  
as those skilled in the art will readily appreciate, any number of finger holes can be used  
depending on the particular design requirements and manufacturing specifications. The finger  
hole design can take on various forms. By way of example, convex or semi-circular recesses in  
the annular wall 28 can be used to provide easy access to the periphery of the disc during the  
removal process.

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A retaining member 34 extending upward from base panel 24 can be used to engage the  
central aperture of the disc. The retaining member 34 can be designed in any fashion that  
sufficiently retains the disc in the storage container. One such design includes an annular ring  
36 which supports the unrecorded inner edge of the disc adjacent the central aperture. The  
25 annular ring 36 and the annular wall 28 cooperate to maintain the disc in the storage container  
away from the base panel 24. Cantilevered from the annular ring 36 are six inwardly extending  
radial arms 38 which collectively form a hub. As best seen in FIGS. 2 and 3, the hub includes  
an upper surface 40 with an outwardly extending lip 42 which overlies the unrecorded inner edge  
of the disc when retained by the hub.

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To engage the disc with the retaining member 34, the disc is placed inside the storage  
container with its outer edge over the seat 30 of the annular wall 28 and its center aperture over  
the upper surface 40 of the hub (see FIG. 1). The placement of the disc over the hub prior to  
engagement is shown in FIG. 2. The disc 44 can be manually pressed by the user toward the  
35 base panel 24 until the inner edge of the disc 44 defining the center aperture slides over the lip

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40 and into engagement with the hub as shown in FIG. 3. Referring to FIG. 3, the disc 44 can  
be removed from the retaining member 34 by applying a downward force to the upper surface  
5 40 of the hub to force the lip 40 downward through the center aperture of the disc to free the disc  
from the retaining member 34. An attractive feature of the retaining member design is that the  
annular ring 36 prevents the downward movement of the inner edge of the disc 44 despite any  
downward movement of the hub. This approach prevents the disc 44 from being damaged due  
to undesirable flexing of the disc 44 during removal.

10 Referring back to FIG. 1, the lid 14 includes a lid panel 46 with a peripheral lid wall 48  
extending along the three sides of the lid panel 46 not attached to the living hinge 20. A lip 50  
can be formed at a distal end of an interior portion of the peripheral lid wall 48 on each side of  
the storage container. A rail 52 can be positioned on each side of the storage container along the  
base panel 24 each which cooperates with the peripheral base wall 26 to form a nesting slot for  
15 a respective one of the lips 50. In at least one embodiment of the storage container, the lips 50  
can be configured with a concave design that extends close to or all the way to the base panel 24  
when the storage container is in the closed position. This arrangement may prevent the disc from  
sliding out of the storage container should the disc become dislodged. The concave design of the  
lips 50 may also make it more difficult for one to remove the disc from the storage container  
20 through a gap between the peripheral base and lid walls when the storage container is in the  
closed position. These attendant benefits may be achieved with other lip designs without  
departing from the inventive concepts described herein. By way of example, the lips 50 can be  
rectangular, triangular, or any other design which covers at least a portion of the gap formed  
between the peripheral base and lid walls when the storage container is in the closed position.

25 The storage container may be equipped with additional features that maintain the disc in  
engagement with the hub during transportation and handling of the closed storage container. The  
lid 14 may include tabs 54 which engage the outer edge of the disc when the storage container  
is in the closed position. Each tab can be supported by the lid panel 46 and includes a surface  
30 which extends inwards toward the center of the lid 14 and away from the peripheral lid wall 48.  
Alternatively, each tab can be configured as a flat member extending directly from the front  
portion of the peripheral lid wall 48 inward toward the center of the lid 14.

35 The tabs 54 can be designed to work alone, or alternatively, in combination with other  
structures to maintain the disc in engagement with the hub when the storage container is in the

1 closed position. By way of example, the hinge panel 18 can be configured with a reinforcing rib  
56 that not only increases the structural strength of the hinge panel 18, but can be used to further  
maintain the disc in engagement with the hub when the storage container is in the closed position.  
5 This can be accomplished with a variety of rib designs depending on the aesthetic criteria for the  
storage container. By way of example, the reinforcing rib 56 can extend inwardly from the hinge  
panel 18 a sufficient length such that, when the storage container is in the closed position, the  
reinforcing rib 56 extends over the annular wall 28 and engages the unrecorded upper surface of  
the disc. The reinforcing rib 56 can be designed with a semi-circular recess or convex  
10 configuration for alignment with the seat 30 of the annular wall 28 to avoid placing undue stress  
on portions of the disc unsupported by the seat 30.

FIG. 4 is a perspective view of an exemplary storage container in the closed position.  
FIG. 5 is a cross-section view of the exemplary storage container of FIG. 4 taken along line 5.  
15 The manner in which the reinforcing rib 56 cooperates with the tabs 54 of the lid 14 to effectively  
clamp the outer edge of the disc to the seat 30 of the annular wall 28 is shown in FIG. 5. In at  
least one embodiment of the storage container, the tab 54 can be formed with a 58 at its distal  
end. As shown in FIG. 5, with the storage container in the closed position, the tab 54 extends  
over the annular wall 28 of the base panel 24 such that the ridge 58 engages the unrecorded upper  
20 surface of the disc to securely lodge the disc between the ridge 58 and the seat 30 of the annular  
wall 28. In a similar manner to the reinforcing rib 56, the ridge 58 can be formed with an arc  
shape that is aligned with the seat 30 of the annular wall 28 when the storage container is in the  
closed position to avoid flexing the disc by placing a downward force on a portion of the disc  
unsupported by the seat 30. The ridge design minimizes surface contact between the tabs and  
25 the disc. In addition, the ridge design may provide for a tighter grip on the disc since the tabs  
have to be located sufficiently above the disc when the storage container is in the closed position  
to clear the annular wall 28. Alternatively, the tabs can be used to directly to secure the disc to  
the seat 30 of the annular wall 28.

30 The storage container may also be equipped with a latching mechanism to discourage the  
unauthorized removal of the disc from the storage container during retail distribution. The  
latching mechanism may take on various forms depending on the overall design constraints and  
security objectives. By way of example, the latching mechanism can be designed in a manner  
that requires a significant amount of force to open the storage container. Numerous techniques  
35 may be employed to implement this type of latching mechanism. These techniques can range

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from a single latch to any number of latches working together to achieve a storage container which cannot be easily open without exerting considerable force.

5 An exemplary latching mechanism for a storage container is shown in FIG. 1. The exemplary latching mechanism includes tabs 60 supported by the lid 14 in combination with catches 62 supported by the base 16. The tabs 60 can be designed in various fashions depending on the design specifications and other relevant factors. In the described exemplary embodiment, the tabs 60 are fairly rigid members supported by the lid panel 46. Increased rigidity may be  
10 achieved with a pair of reinforcing ribs 61 on each of the tabs 60. As best seen by FIG. 1A, a detent 64 can be located at the distal end of the tab 60. The detent 64 includes a tapered surface 65 with an undercut wall 67. The catches 62 are also fairly rigid members extending from the base panel 24 (see FIG. 1). As best seen in FIG. 1B, the catch 62 includes a catch member 64 with an aperture 66 formed therein for catching the detent 64 of the tab 60 when the storage  
15 container is being closed. A support member 68 extending upward from the base panel between the aperture 66 and the peripheral base wall 26 is used to maintain rigidity of the catch 62 when the storage container is being opened and closed.

20 FIG. 6 is a perspective view of the tab and catch just prior to engagement as the exemplary storage container is being closed. FIG. 7 is a cross-section view of the exemplary storage container of FIG. 6 taken along line 7. As shown in FIGS. 6 and 7, when the storage container is being closed by the user, the tapered upper surface of the detent 65 comes into contact with the upper portion of the catch member 64. Since the tab 60 and the catch 62 are fairly rigid, the user must increase the force applied to the base and lid to bring them together to  
25 cause either the tab 60 to flex slightly backward and/or cause the catch member 64 to flex slightly forward against the support member 68 to allow the tapered upper surface of the detent 65 to slide past the exterior upper portion of the catch member 64 and snap into the aperture 66 with the undercut wall 67 facing the interior upper portion of the catch member 64 as shown in FIG. 8. FIG. 8 is a cross-section view of the exemplary storage container of FIG. 6 taken along line  
30 7 with the exemplary storage container in the closed position. Because of the undercut wall 67 of the detent 60, the force to open the storage container is even greater than that required to close the storage container. To open the container, the user applies a force to the base and lid to separate them from one another. In a manner similar to that described in connection with the closing of the storage container, the applied force to the storage container must be sufficient to  
35 cause either the tab 60 to flex slightly backward and/or cause the catch member 64 to flex slightly



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forward against the support member 68. However, in this case, since the undercut wall 67 of the  
detent 64 is not tapered, the force required to flex the tab 60 backward and/or the catch member  
64 forward against the support member 68 to allow the detent 64 to clear the catch member 64  
5 and release it from the aperture is much greater. This increased force to open the storage  
container may discourage the unauthorized opening of the storage container in the retail  
environment.

10 The amount of force required to open and close the storage container can be varied by  
altering the design the reinforcing ribs on the tab or the support member for the catch. The tabs  
may be designed with a support member similar to that used for catches, either alone or in  
combination with the reinforcing ribs, to set the amount of force required to open and close the  
storage container. The rigidity of the material used for the tabs and catches can also be varied.  
15 One skilled in the art will readily be able to determine the material needed for the tabs and  
catches, and the designs of the supporting structures, if any, to meet the specific design  
requirements of any particular application.

20 Returning to FIG. 4, the exemplary storage container can be configured with a pair of  
removable tabs 72a and 72b. During retail distribution of the storage container, the removable  
tabs are in the closed position as shown by the removable tab 72a. Once the storage container  
is removed from the retail environment, it can be opened by first moving removable tabs to the  
open position as shown by the removable tab 72b. Once the removable tabs are moved to the  
open position, the storage container can then be opened by separating the base 16 from the lid  
14. As best shown in FIG. 9, the removable tab can be moved between the open and closed  
25 position via a break-away hinge 74 connecting the removable tab to the base 16. The removable  
tab 72 is generally square or rectangular shape with an arm 76 extending from an interior portion  
of the removable tab. The removable tab 72 may also include four prongs 78 with two projecting  
from each side of the interior portion. When the removable tab 72 is in the closed position, the  
arm 76 extends through a center slot 80 formed in the peripheral lid wall 48 and the prongs 78  
30 straddle a horizontal bar 81 extending through the peripheral lid wall 48. This configuration may  
provide heightened security in the retail environment by making it more difficult to open the  
storage container without authorization.

35 Once the storage container is removed from the retail environment by the consumer, the  
removable tab 72 can be opened and separated from the base 16 by applying an upward or

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twisting force to the removable tab 72 to break the hinge connection. The removable tab 72 can  
then be physically rotated 180° with respect its original position and reinserted into the front  
portion of the peripheral lid and base walls as shown in FIG. 10. In this position, the arm 76  
5 extends through the aperture 66 in the catch member 64 forcing the detent 64 of the tab 60 out  
of the aperture 66 to allow the consumer to easily open the storage container by merely applying  
a force to separate the base 16 from the lid 14 sufficient to overcome the insertion force of any  
other commonly known latches employed by the storage container. Each prong 78 may be  
10 formed with a detent 84 having a tapered surface with an undercut. When the removable tab 72  
is being inserted into the front portion of the peripheral lid and base walls, the tapered portion  
of the detents 84 rides against interior walls 86 of the peripheral base wall 24 hereby flexing the  
prongs 78 toward one another. Once the detents 84 clear the interior walls 86, the prongs 78  
revert to their non-flexed state with the undercut of the detents 84 engaging the ends of the  
15 interior walls 86. This arrangement holds the removable tabs in place once the hinges have been  
broken away from the base 16.

Returning to FIG. 4, the peripheral base and lid walls 24 and 48 can be formed with  
slightly concave portions in the front portion. This arrangement provides an area where one can  
20 grasp the base and lid to open the storage container. These concave portions may be particularly  
useful to a consumer opening a storage container that does not have removable tabs that disable  
the latching mechanism.

Although exemplary embodiments of the present invention has been described, it should  
not be construed to limit the scope of the appended claims. Those skilled in the art will  
25 understand that various modifications may be made to the described embodiments. By way of  
example, any feature of the exemplary storage containers can be employed alone or in  
combination with one or more features. Moreover, to those skilled in the various arts, the  
inventive features described throughout can be employed with storage containers for other  
30 devices such as video cassettes and the like. It is therefore desired that the present embodiments  
be considered in all respects as illustrative and not restrictive, reference being made to the  
appended claims rather than the foregoing description to indicate the scope of the invention.